

CLAIMS

WHAT IS CLAIMED IS:

1. An imaging system for creating a three dimensional image of an object,
said system comprising;

5 a housing,

at least three light sources mounted to said housing and being selectively
illuminated for projecting light on the object,

a camera spaced from said housing for capturing projected light reflecting
from the object,

10 an imaging device mounted to said housing and spaced from said light
sources for focusing the projected light to define an image projected upon the
object, and

15 a controller connected to said light sources for sequentially illuminating said
light sources to produce at least three different images on the object and connected
to said camera for controlling said camera to capture the different images for
creating the three dimensional image of the object.

2. An imaging system as set forth in claim 1 wherein said imaging device
includes a lens for focusing the projected light to create the image.

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Docket No. 65,017-173

3. An imaging system as set forth in claim 2 wherein said lens is further defined as a fresnel lens having a series of concentric grooves which act as individual refracting surfaces.

5 4. An imaging system as set forth in claim 3 wherein said fresnel lens is mounted to said housing such that said grooves face inward toward said light source.

10 5. An imaging system as set forth in claim 3 wherein said fresnel lens is mounted to said housing such that said grooves face outward away from said light source.

15 6. An imaging system as set forth in claim 2 wherein said imaging device further includes a diffuser for blurring the image projected onto the object.

7. An imaging system as set forth in claim 6 wherein said diffuser is further defined as a lenticular lens having an array of aligned cylindrical lenses, as viewed in cross section.

20 8. An imaging system as set forth in claim 7 wherein said diffuser is mounted to said housing such that said cylindrical lenses face inward toward said light sources.

9. An imaging system as set forth in claim 1 further including a sensor mounted within said camera for viewing the object and capturing each of the images produced by said matrix of light sources.

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10 10. An imaging system as set forth in claim 9 further including a processor interconnected to said camera for converting the images of the object projected thereon into a three-dimensional bit map of the object.

11. An imaging system as set forth in claim 9 wherein said sensor includes a two-dimensional imaging array.

12. An imaging system as set forth in claim 9 wherein said sensor includes a line scan sensor defining a one-dimensional imaging array for producing a bit map along a single line.

13. An imaging system as set forth in claim 9 wherein said sensor includes a single detector for producing a bit map at a single point.

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14. An imaging system as set forth in claim 1 wherein said light sources are further defined as a plurality of light sources arranged in at least three rows to define a matrix of light sources.

15. An imaging system as set forth in claim 14 wherein said rows of light sources are formed of discreet point light sources defined by light emitting diodes.

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16. An imaging system as set forth in claim 1 wherein said light sources are further defined as a plurality of at least three slab diode lasers.

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17. An imaging system as set forth in claim 1 wherein said light sources are further defined as a plurality of at least three horizontally oriented light stripes which emit a line of light.

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18. An imaging system as set forth in claim 1 wherein said light sources are discreet point light sources defined by light emitting diodes.

19. An imaging system as set forth in claim 1 wherein said light sources are discreet point light sources defined by laser diodes.